Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Previously Presented) A document image processor comprising:

image inputting means for preparing a document image by reading a paper document;

region dividing means for dividing the document image into a plurality of regions; and

title-region extracting means for calculating first averages as an average of character size for characters in each region divided by the region dividing means, and then extracting title regions from the respective regions according to the first averages,

wherein the title-region extracting means further comprises:

means for calculating a second average that is an average of character size for characters within all the regions;

means for comparing the first averages and extracting criteria found by multiplying the second average by extracting parameters, the extracting parameters on a plurality of levels calculated based on a value found by dividing a maximum of the first averages by the second average; and

means for extracting the regions with the first average larger than the extracting criteria, as the title region.

2. (Previously Presented) A document image processor according to claim 1, wherein the title-region extracting means calculates the first averages and the second average based on an average height of characters.

3. (Previously Presented) A document image processor according to claim 1, wherein the title-region extracting means calculates the first averages and the second average based on an average width of characters.

4. (Previously Presented) A document image processor according to claim 1, wherein the title-region extracting means calculates the first averages and the second average based on an average area of characters.

5. (Cancelled)

6. (Previously Presented) A document image processor according to claim 1, wherein the means for extracting the regions as the title region further extracts each level attribute indicating the level corresponding to each extracted title region.

7. (Cancelled)

8. (Previously Presented) A document image processor according to claim 1, wherein the title-region extracting means adopts the trimmed mean method for discarding a specific proportion of the minimum and the maximum values and then computing the means of the remaining values, in order to calculate the first averages and the second average of character size.

9. (Previously Presented) A document image processor according to claim 1, further comprising correcting means for correcting character strings of the extracted title regions.

10. (Cancelled)

11. (Previously Presented) A document title extracting method for a document image processor comprising:

an image inputting step of preparing a document image by reading a paper document;

a dividing step of dividing a plurality of regions from the document image;

a calculating step of calculating first averages as an average of character size for characters in each region; and

a title-region extracting step of extracting title regions from the respective regions according to the first averages, and

wherein the calculating step comprises a step for calculating a second average that is an average of character size in all the regions,

the title-region extracting step comprises a step of comparing the first averages and extracting criteria found by multiplying the second average by extracting parameters, the extracting parameters on a plurality of levels calculated based on a value found by dividing a maximum of the first averages by the second average; and

a step of extracting the regions with the first average more than the extracting criteria, as the title region.

12. (Previously Presented) A document title extracting method for a document image processor according to claim 11, in which the calculating step comprises a step of calculating the first averages and the second average based on an average height of characters.

13. (Previously Presented) A document title extracting method for a document image processor according to claim 11, in which the calculating step comprises a step of calculating the first averages and the second average based on an average width of characters.

14. (Previously Presented) A document title extracting method for a document image processor according to claim 11, in which the calculating step comprises a step of calculating the first averages and the second average based on an average area of characters.

15. (Cancelled)

16. (Previously Presented) A document title extracting method for a document image processor according to claim 11, in which the step of extracting the regions as the title region further extracts each level attribute indicating the level corresponding to each extracted title region.

17. (Cancelled)

18. (Cancelled)

19. (Original) A document title extracting method of a document image processor according to claim 11, further comprising the step of:

correcting character strings of the extracted title regions.

20. (Cancelled)

21. (Previously Presented)A computer readable medium storing a program for performing the steps of:

dividing a document image prepared by reading a paper document into a plurality of regions;

calculating first averages as an average of character size for characters within each region and a second average that is an average of character size in all the regions;

comparing the first averages and extracting criteria found by multiplying the second average by extracting parameters, the extracting parameters on a plurality of levels calculated based on a value found by dividing a maximum of the first averages by the second average; and

extracting the regions with the first average more than the extracting criteria, as the title region.

22 - 34. (Cancelled)

35. (Currently Amended) A document title extracting method for a document image processor comprising:

an image inputting step of preparing a document image by reading a paper;

a dividing step of dividing a plurality of regions from the document image;

a calculating step of calculating first averages as an average of character size for characters within each region; and

a title-region extracting step of extracting title regions from the respective regions according to the first averages, and

wherein the calculating step comprises ~~comprise~~ a step for calculating a second average that is an average of character size in all the regions,

the title-region extracting step comprises a step of comparing the first averages and extracting criteria found by multiplying the second average by extracting parameters, the extracting parameters on a plurality of levels calculated based on a value found by dividing a maximum of the first averages by the second average; and a step of extracting the regions with the first average larger than the extracting criteria, as the title region, and

the first averages and the second average are calculated according to the trimmed mean method for discarding a specific proportion of the minimum and the maximum values and then computing the means of the remaining values.

36. (Previously Presented) A document title extracting method for a document image processor according to claim 35, in which the calculating step comprises a step of calculating the first averages and the second average based on an average height of characters.

37. (Previously Presented) A document title extracting method for a document image processor according to claim 35, in which the calculating step comprises a step of calculating the first averages and the second average based on an average width of characters.

38. (Previously Presented) A document title extracting method for a document image processor according to claim 35, in which the calculating step comprises a step of calculating the first averages and the second average based on an average area of characters.

39. (Previously Presented) A document title extracting method of a document image processor according to claim 35, further comprising the step of:

correcting character strings of the extracted title regions.

40. (Previously Presented) A document title extracting method of a document image processor according to claim 35, wherein the characters of which character size are lower than the specific portion are punctuation marks.

41. (Previously Presented) A document image processor according to claim 8, wherein the characters of which character size are lower than the specific portion are punctuation marks.